

# ENERGY PARTNERSHIPS

CALIFORNIA ENERGY COMMISSION

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## SHASTA COUNTY

The Shasta County Jail is a 115,035 square-foot facility located in Redding. Built in 1984, this facility has an 11-story jail wing attached to a two-story County administrative wing that houses courtrooms and offices.

In 1994, the County looked for ways to cut the facility's operating cost while increasing employee, inmate and public comfort in the summer. The County had several specific concerns, including: the high energy use for water heating, clothes drying and lighting; the inability of the existing cooling system to handle hot summer days; the poor calibration of the heating, ventilating and air conditioning (HVAC) system controls; and the lack of controls for the supply fans.

The California Energy Commission helped the County with their concerns. As a result of the recommended energy projects, the jail's energy cost dropped by 24 percent, saving about \$80,000 per year. The County will recoup its \$555,500 project cost in less than seven years.

### FINDING HELP

In 1994, the County sought help with spiraling energy costs at the jail. With assistance from the Energy Commission's Energy Partnership Program, the County identified ways to improve the comfort and reduce operating costs of the jail through energy efficiency. The Energy Commission prepared a feasibility study and identified several cost-effective projects that addressed the County's energy and comfort concerns.

Through the Program, the Energy Commission assisted in the implementation of the projects. The Program provided equipment performance specifications and a low interest \$200,000 loan. The County financed the remaining project costs using its own funds. All projects were installed by 1997.

### PROJECTS IMPLEMENTED

The County Jail received a comprehensive efficiency makeover that included:

- Replacing the electric boiler with a natural gas-fired boiler to provide hot water for domestic, kitchen and laundry needs



*Energy efficiency projects at the Shasta County Jail have dropped energy costs by 24 percent.*

- Retrofitting inefficient fluorescent fixtures with new T-8 lamps and electronic ballasts
- Replacing electric dryers with those using natural gas
- Installing variable frequency drive controls on the main air handling units and converting the air-distribution system to a variable air-volume system
- Calibrating, adjusting and improving the HVAC controls



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- Replacing the existing cooling tower with a new low horsepower cooling tower that would allow multiple chillers to operate during very hot summer days and allow the jail to expand the conditioned space in the future
- Installing new reduced-horsepower condenser water pumps (10 HP versus 15 HP).

### ENERGY SAVINGS

Dave Sokol, project manager for Shasta County, said “The County’s energy consumption dropped so much that the local utility company pulled our meters to have them checked and recalibrated. I was amazed at the effect these projects had on our bill. In the first 12 months of operation, the jail’s energy cost dropped by 24 percent. This means that we are saving about \$80,000 per year and will recoup our \$555,500 project cost in less than seven years. An excellent investment since our electricity rates increased by 23 percent in 1997!”

### IMPROVED COMFORT AND OTHER BENEFITS

In addition to the energy savings, the improvements solved many comfort and operation problems at the jail. New lighting resulted in a more secure environment for the employees. Modifying the HVAC controls allowed for better scheduling of equipment operations, increased building comfort and reduced equipment maintenance. Installing the variable frequency drive controls resulted in quieter equipment operations. The new cooling tower allowed the jail to operate both chillers at the same time, providing adequate cooling to the buildings even on the hottest summer days. In addition, the new cooling tower allowed the County to expand the air conditioned space at the jail without having to spend money on a new chiller.

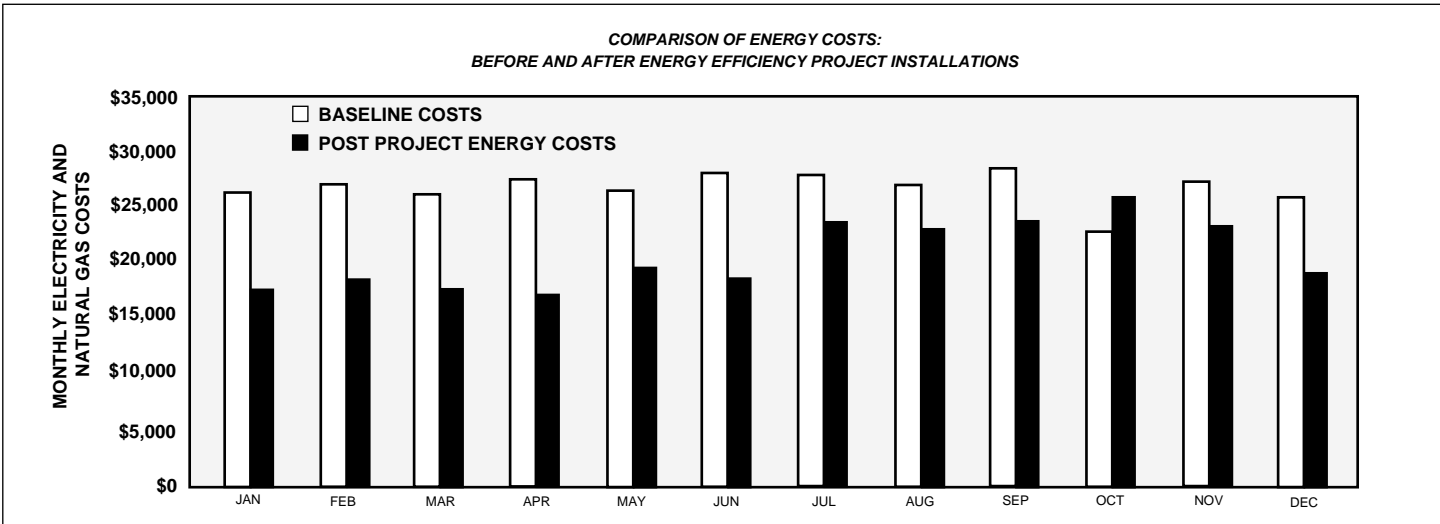
### PERSPECTIVES

Because of the success of these energy efficiency projects, the County plans to pursue additional projects, such as a plate and frame heat exchanger to air condition the jail without using mechanical cooling on mild outside temperature days.

Sokol had these suggestions for others planning to implement energy efficiency: “Get a champion to push each energy efficiency retrofit through the system. Document the savings and keep your management informed of the project progress and benefits. The fact that our County received the Energy Commission’s Outstanding Energy Achievement in Local Government Award raised the level of awareness and knowledge about the project benefits to our Board and management.”



*The new cooling tower allowed the jail to operate both chillers at the same time and to expand their air conditioned space without buying a new chiller.*



### FOR MORE INFORMATION

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